OTIS (F.N.) Duplicate

ON

REFLEX IRRITATIONS

THROUGHOUT THE

GENITO-URINARY TRACT,

RESULTING FROM CONTRACTION OF THE URETHRA,

AT OR NEAR THE MEATUS URINARIOUS,

CONGENITAL OR ACQUIRED.

By FRESSENDEN N. OTIS, M. D.,

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READ BEFORE THE NEW YORK ACADEMY OF MEDICINE,
THURSDAY, FEBRUARY 19TH, 1874.

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CHARLESTON, S. C.
PRINTED BY H. P. COOKE & CO.
52 BROAD STREET.
1874.

From the Charleston Medical Journal and Review, July, 1874.

ART. III.—*On Reflex Irritations throughout the Genito-Urinary Tract, resulting from contraction of the urethra, at or near the Meatus Urinarious, congenital or acquired.* By FRESSENDEN N. OTIS, M. D., Clinical Professor of Genito-Urinary Diseases in the College of Physicians and Surgeons, New York.—Read before the New York Academy of Medicine, Thursday, February 19th, 1874.

The influence of the irritation of peripheral nerves in producing centric disturbance in the spinal cord, which may thence be transmitted to distant parts of the animal economy, first claimed by Dr. Marshall Hall more than twenty years ago, has found corroboration in the testimony of every medical scientist since his time; and besides, so much clinical proof has been accumulated by the medical profession at large, in support of this proposition, that it is no longer a matter of discussion. Morbid reflex disturbances are now accepted as occupying an important place in the recital of human suffering. Varied and grave disturbances, influencing the entire nervous system, are often ascertained to be dependent upon as apparently insignificant a cause as a decayed tooth, an indigestion, a simple erosion upon the cervix uteri, ceasing at once on the cessation of the cause. Dr. D. Campbell Black, in his very interesting and valuable book on the Renal and Urinary organs, cites cases of retention of urine from reflex irritation, the result of an operation for hæmorrhoids. Dr. Sayre, of New York, has published an account of several cases of incontinence, caused by contracted prepuce, which were at once and permanently relieved by circumcision. Trousseau has recorded similar cases. I have seen several cases of this sort, besides one marked case of retention in an infant nine months old, which, after lasting four days, was completely relieved within an hour by slitting up the prepuce. Seminal emissions are well known to occur as a result of phymosis, relief occurring promptly on ablation of the prepuce.

Dittel relates a case where a man, 26 years of age, had a slight phymosis, and was the subject of incomplete erections, nocturnal emissions, frequent desire to urinate, and also of many hypochondriac symptoms, all of which were promptly and completely cured by removal of the prepuce. A similar case is related by Pitha. Schweigger-Seidel cites a case where the simple introduction of a catheter caused complete syncope, and yet no urethral disease was present. I have the record of a similar case, where complete unconsciousness instantly followed the introduction of a bulbous sound through the meatus urinarious. Every surgeon of much experience, has recognized the tendency to syncope in a considerable proportion of nervous patients on the first introduction of instruments through the meatus.

Spasm of the bladder is noted by Dr. D. C. Black as occurring from sympathetic irritation, and to such a degree that complete closure of the uretral orifices results, producing retention of urine in the ureters and pelves of the kidney. Such a case, I believe, I have seen resulting in death from uremia, and caused by the rude introduc-

tion by the patient of a catheter through a narrow stricture at the posterior border of the fossa nivacularis. Forcible and painful contraction of the bladder followed immediately, with complete suppression of urine. The patient died uremic 24 hours after. The bladder was found empty, (with the exception of a few drachms of grumous blood and mucous) closely contracted and free from disease. The ureters were normal, the kidney highly engorged with blood, but presenting no evidence of disease. The case was accepted as one of "acute suppression" at the time. The ureters are known to contract vigorously under the influence of the galvanic current. The above case, it now seems to me, was one of spasm of the ureters and bladder, reflected from the irritation at the end of the penis. A few days since, Dr. Brown Sequard related to me the following case:

While in London during the past year, a gentleman was brought to him who presented all the rational signs of advanced central ramollisement. He had looked upon the case as quite hopeless, until noticing that the patient frequently applied his hand in an absent sort of way to his genital apparatus. The doctor requested permission to examine the part. An aggravated inflammatory phymosis, complicated with acute balanitis, was discovered. "On making this discovery," said Dr. Brown Sequard, "I expressed to the medical gentlemen accompanying, and in charge of the patient, my belief that the apparent ramollisement might be due to reflex irritation, caused by this evidently chronic and severe irritation of the glans penis. I advised complete division or ablation of the prepuce, and treatment of the balanitis as the best and only hope for the patient's recovery from the brain trouble from which which he was suffering." The operation was performed, and the effect upon the mental and physical condition of the patient was almost immediate. "So rapid was his recovery," said Dr. Brown Sequard, "that within six weeks from the date of the operation he presented himself at my office, permanently well in every respect."

Sir Henry Thompson (Stricture of the Urethra, London Edn, p. 249) says: "I have given complete relief to distressing symptoms of very long continuance, *the cause of which was not suspected*, by dividing an external meatus, which nevertheless admitted a No. 6 English catheter."

"I have met," he further states, "with three marked examples of a similar kind, in which the very simple operation necessary was followed by complete disappearance of urinary difficulties, which had been long regarded as of an extremely obscure character." He cites a single case: (page 253 op cit) "T. T., aged 34, a gentleman whom I had visited at the request of his medical attendant, in the spring of 1857, had been suffering from painful, prolonged and frequent micturition for five years previous. He was compelled to pass water from three to five times every night, and every two hours during the day; experienced severe pains in the back and loins, and general ill health. Urine was purulent, fetid, alkaline—results of habitual retention,

and partial engorgement of the bladder. He had been treated for renal disease, without any good effect. On examination, I found a simple narrowing of the urethral orifice, and marks of previous ulceration in a small cicatrice. "I learned," said he, "that he had had a chancre seven years before, which involved a large portion of the meatus, after the healing of which his symptoms almost imperceptibly appeared. A probe only passed through the narrow opening. I divided the contraction so as to make a free opening. A number 10 was passed easily into bladder, demonstrating that there was no other obstruction, and 12 ozs. of urine were drawn off, although he had passed water just before. The relief was almost instantaneous; in a week it was complete. He has had perfect immunity from his urinary complaints ever since."

By the cases already cited, and many others scattered through the periodical literature of the past few years, it is sufficiently proved that hemiplegia may result from disease of the kidneys, without any coincident morbid change in the structure of the spinal cord, and that incontinence of urine, retention of urine, and involuntary seminal emissions, may, in the same manner, result from irritation of the extremity of the glans penis. The case of simulated central ramollisement related by Dr. Brown Sequard, occurring as a direct sequence of like irritation, indicates the wide range of sympathetic disturbances, which may be initiated by simple inflammatory action at this point. Now aside from the fact that the glans penis is known to be extraordinarily rich in sympathetic nerve cells, that it is the recognized initial point from which the physiological sexual excitement is transmitted throughout the male genitalia, clinical experience abounds with evidences of the capacity and proneness of this especial region to produce reflex disturbances, often of a grave character, throughout the entire sympathetic nervous system. Notwithstanding these facts, I believe that the full significance of this locality, as a source of reflex irritation along the genito-urinary tract, has not yet been appreciated; and further, I am convinced that many heretofore obscure difficulties and diseases of the genito-urinary organs, may be distinctly traced to the meatus urinarious as the source of their initiation and continuance. In pursuance of this idea, prrmit me, gentlemen, to present for your consideration the following cases:

Case 1.—A. Y., physician, aged 28, contracted first gonorrhœa, November 20th, 1873. Severe, lasted four weeks. Treatment by alkalies internally, application of cold and mild injections. Was under my care. I noticed on examination that his penis was large and the meatus small, and called patients attention to this fact, when he first presented for advice, and assured him if he did not have a fair recovery it would be necessary to enlarge it. January 19th—Patient presents with gleety discharge, without known cause. Great irritation at the neck of the bladder, and frequent desire to urinate. Is certain that his former disease was imperfectly cured, and that it has come forward from the deep urethra, to which it had extended in his

original clap. I remind him of his contracted meatus; he is certain he needs deep injections, but submits to operation for enlargement of meatus. Cut it to 30 fr., after which 30 bulb passes throughout the canal with ease; to keep incision open until healing is complete. January 24—Patient reports immediate cessation of irritation in the perineal portion of the urethra on division of contraction; discharge ceased within 48 hours, and he has had no trouble since.

Case 2.—Sept. 10th, 1872. Mr. W., a Swede, silk weaver, was brought to me by his medical attendant, complaining of pain and general discomfort about the perineum, and especially of a nervous uneasiness in that region, which prevented him from pursuing his avocation. He could not sit still. Had had gonorrhœa several years previous. Had been treated for stricture by dilatation for several months, but without relief. Examination showed a narrow meatus; No 21 f. Stricture at 2½ inches, defined by 18 f. A free division of meatus was made with Civiale's *bistouri cache* and of the stricture with the dilating urethrotome, after which 27 f. passed readily through. To be kept open by daily introduction of sound until healed. September 20th—Patient reports entire cessation of irritation and nervous feeling immediately following the operation, but this returned yesterday. Examination shows recontraction of meatus to 20. Cut again freely. Nov. 16th—Patient again called with the statement that he had been able te work until the day previous, when the irritation had again returned, and he desired to be cut again. Examination showed a recontraction at the meatus to 24. Cut again; introduced 30 f., which passed easily past the site of stricture at 2½ inches, and down to the bulbo membranous junction. The patient called two months after (January 20th), wishing to go to Philadelphia, and had had no return of his trouble. No recontraction of meatus.

Case 3—Mr. W., aged 27, had gonorrhœa in 1870, lasting one month, when a fresh exposure resulted in another attack, which lasted under a sharp fire of injections for six months longer. Since that time has always had a return of the discharge after connection. Has been under treatment for stricture by several physicians, but none succeeded in entering the bladder. His last medical attendant, after treating him for a couple of months, said that he had no instrument small enough to pass, and advised him to put himself under my care. Examination, April 16th, showed organ unusually well developed. Meatus contracted to 24 f., red, pouting and bathed in a muco-purulent discharge; 24 sound is arrested at 5 inches, only fine filiform will pass, and that is closely hugged. April 19th—Passed filiform with ease—followed with No. 10, and then, with some effort, with No. 16 f. After this the filiform was again closely hugged in the membranous portion. Divided the meatus freely and introduced No. 30 f. steel sound, which passed, literally by its own weight, down through into the bladder.

Case 4.—Mr. J. W., aged 32, had gonorrhœa 10 years ago very severely. Lasted with pain and difficulty of micturition fully six months. After being apparently well for three years, a gleety discharge appeared, without new exposure. Masturbated daily from 14 to 20 years, when he abandoned the habit. At 26 began to have nocturnal emissions, which growing gradually more frequent, since last two years have occurred almost nightly. He has had occasional sexual intercourse. Erections have been imperfect for last 18 months, ejaculation taking place before the erection was complete. He has suffered much from despondency and nervousness. Has had no treatment except for general health, which much of the time has been indifferent. Examination shows genitals well developed and apparently normal, with the exception that while the circumference of the flaccid penis is three inches, the meatus is contracted to 22 f. The size of the urethra in a penis three inches in circumference is, as a rule, fully 30 f.* November 1st—Divided meatus thoroughly, and passed thirty-one bulbous sound readily through contraction. November 11th—Has had no emissions since date of operation. December 1st—Found himself getting so much better in spirits and feelings generally, that he ventured to marry on the 25th. Since that time has had no trouble of any sort. Considers himself a well man

Case 5.—Mr. W., aged 25. Came under my care December 1st, 1872. Contracted first gonorrhœa early in June, 1872. Was treated by the use of injections locally and alkalies internally until August 1st, during which time he had no freedom from the discharge, nor from acute suffering. About this time the vesical neck became involved, and he suffered much from frequent, painful micturition. Came then under the care of a skilled endoscopist, who discovered numerous spots of granulations in the course of the canal, extending quite into the prostatic portion; applications of a strong solution of nitrate of silver were made through the endoscope, which gave temporary relief; urination, still painful, every hour. By September 1st discharge decreased to a slight mucous, after the use of pencils of tannin and glycerine. A spell of damp weather brought back the purulent discharge, with a return of perineal pain and frequency of micturition. Tannin pencils again used, but after continuing for four weeks and no improvement, patient was put to bed and had hip baths every two hours, etc. After five weeks of treatment of various kinds, local and general, he came from his bed to me, December 1st, 1872. On examination I found no difficulty in introducing No. 20 f. bulbous sound, and discovered a firm cartilaginous stricture extending from just within the meatus half an inch back. This I cut freely with Civiale. Immediately following the operation he expressed himself as "feeling like a new man." In his written report of the case,

* 3½ inches indicates urethral calibre 32 f. 3½ indicates do. 34 f. 3¾ indicates do. 36 f. 4 inches indicates do. 38. 4½ indicates do. 40.

(he was a physician) he stated, "that in the division of the stricture the relief was wonderful, the discharge ceased within twenty-four hours, the perineal pain and frequency of micturition and the ardor urinæ also ceased, and he returned to his duties, which were most active, on the following day, after having been laid up for over five months, and has continued on duty up to the present date, although he still suffers occasionally from prostatic pain. The prostate I found of double the normal dimensions on his first visit, and examination now shows it reduced fully one-third.

**Case* 8.—Mr. L., aged 46, regular and chaste in his habits until going to China, twenty years since, and following the customs of foreigners in that country, he indulged excessively in sexual intercourse for several years. Had a single attack of gonorrhœa, from which he recovered completely in a few weeks. For the last few months has been troubled with involuntary emissions as frequently as once a week, and latterly in his attempts at sexual intercourse he has failed on account of the seminal discharge having occurred before the erection was complete. He feels quite certain that his genital apparatus is less in size than formerly. Examination shows penis of normal size, three inches in circumference and 3 inches in length. Some enlargement of the left spermatic veins. Testes soft, full size, left largest. Meatus urinarius contracted to 22 f. On introduction of the bulbous sound through it, as it was quite unyielding, it required some slight pressure, and as it suddenly slipped into the fossa navicularis, a regular spasmodic retraction of the penis occurred at intervals of three or four seconds, (retraction about ¼ inch), and continuing during the half minute, that the instrument was retained and continuing with rythmic regularity for three or four minutes after its withdrawal. This result of the introduction of the sound was repeated several times at that sitting, the interval between the contractions gradually lengthening until an interval of five or six seconds occurred, when it ceased. These movements, so evidently of reflex origin, suggested the dependence of his seminal troubles on the same cause. I therefore divided the meatus thoroughly, and introduced 31 sound without difficulty through the urethra. After the operation the introduction of the 31 bulb failed to excite the spasmodic contraction of the penis; nor in frequent subsequent experiments was I able to reproduce this phenomenon. An immediate improvement in the general condition of the patient occurred, his involuntary emissions ceased without other treatment, and six weeks after the operation he informed me that he had entirely recovered his sexual powers.

Case 10.—Mr. H. F., aged 43, came under my care in March, 1867, suffering from retention of urine, following a debauch. As no

*Want of space compels us to omit the report of a number of Prof. Otis' interesting cases; this will account for the irregularity of the numbering. Eds.

great amount of urine was present in the bladder, I gave him mur. tinct. ferri, advised a hot bath, and left him. On the following morning he expressed himself free from any trouble, and declined an examination of the condition of his urethra. In December, '71, he again presented, complaining of incontinence; he was also suffering from intermittent fever, which I suspected was due to his urinary trouble. Said he made his water freely, but could not hold it. I found some accumulation in the bladder. As the patient lived out of town, I made no examination, but advised him to make arrangements to come in town on the following day for treatment. He did not present again until November 30th, 1872, when he came with the statement that he had then lost all control of his urine; had had none for the past year. On the day previous, while riding, he noticed a swelling in the perineum, and "wished it looked after." Examination revealed a firm elevation on the left of the raphe, one and a half inches in diameter at the base, and about an inch in elevation, extending from just behind the border of the anus to the junction of the scrotum, with the perineum, solid, resilient and painless. No constitutional disturbance; temperature 98½°. On examination of the urethra, expecting to find a deep, tight stricture, I was surprised to find myself able to pass No. 13f. catheter into the bladder, and to draw off a full pint of fetid urine, although he had just urinated. During the day the swelling increased,and interfered with the calibre of the urethra, so that I could only pass a No. 1 catheter into the bladder, and this with difficulty. Attaching this to Dieulafoy's aspirator, I drew off a pint and a half of urine. This, on examination, was found to be free from any evidence of organic disease of the kidney. I then incised the tumor down through the superficial perineal fascia, and gave exit to a thin layer of pus, in quantity about a drachm. It was only on the 14th day after, (the swelling gradually subsiding,) that urine was found flowing through the wound. In the meantime the patient was suffering from cystitis. His bladder was washed out with a double channelled catheter, No. 20 f., which was passed without difficulty, although a perceptible grasping was recognized near the meatus. His bladder trouble increasing so that he made his water every hour, and this loaded with pus, I urged an operation on the stricture, which, from the easy passage of the catheter, I had not before considered of much importance. Introducing bulbous sound No. 20 f., I could not detect any stricture; on its withdrawal it was arrested at a point half an inch from the meatus. Incising the stricture with the dilating urethrotome, which (No. 23 f.) I introduced with some difficulty, I then passed No. 28 sound, without obstruction, down into the bladder. On the following day I found that the frequency of evacuation of the urine had decreased from *one* hour to *six* between the acts; that the pus had diminished, and that much less urine flowed through the opening in the perineum. From that time the patient continued to improve, his control of the flow of water was restored, the pus gradually disappeared, and within a week his

perineal incision had healed, and he left for his home apparently well, not having had any treatment whatever since the healing of the wound at the point of stricture.

Case 12.—October 16th, 1873—T. W., 35. Had gonorrhœa fifteen years ago; has had it several times since—the last time four years ago; coming on 48 hours from date of exposure. After the discharge had existed ten or twelve days, he states that he "stopped it with a powerful quack injection." Three or four days subsequent to this, he began to suffer with a nervous pain in the testicles; scrotum became tender and red, testicles moved up and down alternately much of the time, and the penis was greatly contracted. There was also pain in the groins, described as drawing and sickening, which extended down into his knees and the bottoms of his feet. This continued with varying severity, almost without cessation, up to Feb. 22d, when he came to New York for treatment, and fell into the hands of an endoscopist, who discovered numerous granular spots, deep in his urethra. Applications made at regular intervals, for about three months, without benefit. An application of carbolic acid to the scrotum, gave some relief to his nervous feelings, but caused vesication, and the relief was but temporary. About May 1st he sought the advice of a surgeon skilled in genito-urinary diseases. Slight stricture was discovered near the meatus, and several indurated points farther down. A 28 f. solid steel sound was introduced, and after some repetition during one month, was given to the patient to be regularly used once in three days, until the trouble ceased. Went back to his home, some 300 miles distant, and pursued the plan laid out for him, but received no benefit. The motion of his testicles was almost constant, and the nervous feeling this induced drove him almost frantic; compared with it, the pains in his groins, knees and feet were a positive relief. He became very low-spirited and despondent. Early in October, when his physician, who had accidentally met with an article in the second number of Dr. Brown-Sequard's archives on "Reflex Irritations of the Genito-Urinary apparatus resulting from stricture," advised him to return to New York, and put himself under my care. Examination discovered a penis of normal size, 3 inches in circumference, scrotum greatly relaxed and covered with exzematous scales, produced by the carbolic acid; testicles hanging very low. My attention was at once drawn by the patient to the rythmical contraction of the cremaster muscles, through which a see-saw motion of the testicles was kept up, and which constituted his chief annoyance. A 30 bulbous sound passed the meatus, and was arrested at half an inch, a point to which his greatest sensitiveness, during the passage of instruments, has always been referred. No. 28 passes through and detects another stricture at two inches, and still another at two and a half inches. Friday, October 17th.—On my invitation, the patient was examined by Dr. Coldham, of Toledo, Dr. J. De Forrest Woodruff and Dr. Frank Howe, especially in reference to the spasmodic action

of the cremasters. This was very marked and constant, and continued until the patient was placed under the influence of ether, by Dr. Howe. I then demonstrated the size and locality of the strictures before mentioned, and divided them in succession with the (my) large dilating urethrotome, after which I passed with ease a 30 steel sound through all, and into the bladder. As the patient emerged from the influence of ether, it was observed that there was no longer any of the spasmodic action of the cremasters. When he became conscious, he stated that he had already felt the cessation of his nervous feelings, more than for many months, and "was certain that the right cord had been struck." October 18th—Improvement continues; no return of spasmodic motion. October 20th—Examination with 30 bulb, shows a slight narrowing at ¼ inch from the external orifice. Cut this at once, and freely, with straight bistoury, and passed 31 f. The patient on the following day expressed his belief that a complete cure had been effected; that since the final division of the meatus he had not had the slightest return of the abnormal sensations and pain with which he had, in some degree, constantly suffered for the previous four years. Daily introduction of the bulb was kept up in this case until bleeding ceased, when the patient was dismissed, promising at once to inform me by letter if he had any return of his trouble.

Case 14.—Mr. H. D., aged 51. Had been under my professional care for several years. Suffered from renal colic on two occasions—once in 1868, and again in 1871. Was not conscious of having passed any stone through the urethra. Came to me in February, 1872, complaining of a sense of irritation at the glans penis, and a frequent desire to urinate. Careful examination failed to discover any calculus, but the meatus was red and tender, and contracted to 20 f. This was at once freely divided. Size not noted. The relief from the irritation was immediate and complete. In May, 1873, Mr. D. called, stating that his old irritation had returned. Examination showed meatus contracted to 23. This was again divided, with relief equally prompt as on the first occasion, but in the subsequent treatment by daily introduction of a glass tube, size 30 f., an unnecessary degree of violence was used, setting up an inflammation, which extended back as far as the prostate, and threatened to culminate in an abscess of that organ. The inflammation was accompanied by a discharge, which did not differ from an ordinary gonorrhœa in the declining stage. After two months of treatment the discharge still continued, with more or less irritation of the vesical neck. Meatus recontracted to 24. Cut to 30. This operation was followed by immediate relief and cessation of discharge. Well up to date, January, 1874.

Case 17.—Mr. X., aged 54. Seen in consultation with Dr. Ives, his family physician. Has a history of first gonorrhœa twenty-eight years previous; severe, lasting two months. Second attack eight years ago; not severe, subsiding entirely on 10th or 12th day, under the use of injections of acetate of lead alone. Three years ago began

to be troubled with frequent micturition during the day, and four or five times during the night, associated with pain extending from the end of penis to the neck of the bladder, also pain in testicles and perineum, and extending down to the thighs. Water occasionally stopped and required to be drawn off with a fine catheter. Was taught to do this himself, and has often required relief in this way. About the first of August last, after using his catheter, he discovered a small bit of gravel in the eye of the instrument; since that time he has voided a large quantity of the same sort, with fine, whitish sand, mucous, pus and blood. Was under the care of a prominent surgeon at Brooklyn last summer, who, after careful examination, assured the patient that he had no stone in the bladder. Treated him at first by frequent washings out of the bladder; afterwards used the galvanic current, with one pole in the bladder, and one on the back. This was continued for six weeks, but no improvement was manifest, and as the patient was much debilitated, he was sent into the country to recruit. Since that time he has had no treatment, except the use of Lee's lithontriptic pills, and the use of the catheter when required by attacks of retention of urine. Nov. 24th, 1873.—Present condition. Is in feeble, general health. Has an expression of great and constant pain, is very restless, and moans frequently, although evidently attempting control; skin pale and yellow; says his weight is 130; weight formerly 160. Genital apparatus well developed; right testicle invaded inferiorly by a mass of fibrous feel, involving one-half of the body of that organ; left, much the same, but softer. Passes urine in my presence in a small, divided, uncertain stream. Urine of strong, stale odor, thick and muddy in appearance. Coagulum under heat, which is not dissolved by nitric acid. Cursory microscopic examination shows cells of pus and blood, epithelia from urethra, bladder, and pelvis of kidney, but no casts. Meatus urinarious apparently normal; 29 bulb sound, to the depth of ⅛ inch; it is, however, abruptly arrested at this point, and only 20 f. will pass. This found no further obstruction in the deeper portion of the canal, but on return was firmly held at ¾ inch—thus defining a stricture more than ¼ of an inch in breadth. On the 26th, visiting the patient's residence, he was found moaning and walking the floor, begging to have the operation done at once, to relieve his pain. Assisted by Dr. Ives, the patient was anæsthetized. The stricture near the meatus was then thoroughly divided; No. 30 was passed through to one inch, where it was arrested; 24 only would pass beyond, and was held on return at 1¼ inches. Introduced dilating urethrotome, turned up to 30, and cut; then passed 30 f. down to two inches, where it was again arrested. 28 f. passed, and on withdrawal is held at 2¼ inches. Readjusting the urethrotome, this band was also divided, when 31 steel sound was passed by its own weight, through the entire urethra. Fergusson's short beaked sound was then introduced into the bladder, and thorough search made for stone, but without success. Hemorrhage slight, ceasing entirely within fifteen minutes after ope-

ration. Dr. Ives remains in charge. Nov. 29th—Three days subsequent to the operation Dr. Ives called, reporting that the patient had no pain of any kind following the operation, up to his visit of yesterday. Under the influence of 10 grains of quinine and ¼ grain of morphine, he slept for six hours, and on waking, passed water with freedom—with slight smarting, but no pain after this; the intervals between the acts of micturition averaged about 4 hours. Passed the steel sound 31 with ease; purulence of the urine greatly decreased. December 16th—Dr. Ives reports Mr. — as having suffered for a day or two past with pain in the penis; purulence in the urine has entirely disappeared. 30 steel sound drops through the urethra into the bladder by its own weight. Suggests the possibility of slight recontraction of the stricture at the meatus as cause of trouble. December 23d—Mr. X. called with Dr. Ives. He reports, personally, that while he passed his water every half-hour with great straining and pain before the operation, that since, he has not been called to urinate oftener than once in three or four hours up to within a week, when it has been once in two hours. All the pains in the back and in the lower part of the abdomen, in the testicles, and extending down the thighs, passed of entirely within a few days after the operation. Within the last ten days he has had pain referred to the vicinity of the prostate when urinating, and the stream was fine and weak; could urinate only by straining. He had himself passed 30 sound the day previous. Examination of the prostate per rectum reveals no enlargement or tenderness. Pass 30 sound without difficulty into the bladder, except a little hugging near the meatus. 29 bulb is arrested at one-quarter inch, and is held on return at three-quarters. Passed a straight bisboury and out through the contraction, so that No. 34 bulb passed in and out without obstruction. To keep this well open until healing is complete.

Case 18.—October 9th, 1873. I was called to see a gentleman aged 64, whose general health has always been good. He had lived generously but regularly. He stated that for the ten years previous he had occasion to urinate on an average every hour during the day, and through the night even more frequently. For the previous six months he was confident that he had micturated every half hour, unless when some necessity prevented, and then suffered always from the delay. At no other time had he any pain. The frequency of micturition was simply an inconvenience. He had never had any gonorrhœal trouble. Several years since he had consulted an eminent surgeon in regard to his urinary trouble, and was said to have stricture just beyond the middle of the penis. For this he was treated by the occasional introduction of bougies for a couple of months, at the end of which time, no benefit being apparent, he ceased bestowing any attention to the matter. About three months ago he began to notice a creamy sediment in the urine, which would cling to the floor of the *pot de chambre*. It was not, however, until about three weeks ago that he began to suffer actual pain, straining on passing his water.

To this was soon added pain in the testicles, through the *hypogastrium*, and also in the *perineum* end, *extending* down the inner aspect of the thighs to the knees. The stream of urine was subject to frequent sudden arrest, and the straining that followed was severely painful, and pain extended throughout the region previously mentioned. The urine soon became of a deep reddish brown color, with occasional strings of blood and mucous, mixed with the copious creamy sediment, which was now persistently deposited. Notwithstanding all this, he continued to ride daily a distance of some three miles to his office. About a week since, finding the motion of his carriage greatly aggravating his pains, he consulted an eminent medical personal friend of his, who informed him that he had a grave cystitis, and commended him to my care. I found him sitting upon a hot poultice, which had been prescribed for him by his wife's medical attendant (a homeopath), and besides this that he had been taking frequent doses of a homeopathic preparation of belladonna. Present condition. Constitutional disturbance very slight; pulse 80, temperature 99⅘. Inspection of urine in the *pot de chambre*, which was about one-third filled, and had been standing for several hours, showed a deposit of mucus and pus, stained and streaked with blood, fully one and a half inch in depth. Examination per rectum showed the prostate to be even less than the normal size, and free from tenderness. The introduction of Fergusson's short beake sound (No. 20 f.) into the bladder was effected with great gentleness, but with ease and without meeting with any abnormal impediment in its passage. The bladder was then thoroughly explored for calculus, but with a negative result. Confident at first from the history and condition of the case that it would prove to be one of stone in the bladder, I had so far only cursorily examined the meatus urinarius. Fergusson's sound, No. 20 f., had passed through it easily—22 f. and 23 f. bulbous sounds even now passed with ease, but 24 f. was held at one-third of an inch. After slight pressure for a few seconds it slipped suddenly through a ring of fibrous tissue and passed without obstruction down to the bulbo-membranous junction. The patient was then put upon the free use of Triticum repens and suppositories of belladonna and hyoscyamus every six hours.

A subsequent microscopic examination of the urine showed pus and blood in abundance, some urethral and vesical epithelium, none from the ureters and pelves of the kidneys, no casts—albumen slight. On suggesting to the patient that division of the strictured meatus was likely to be a necessity before much relief would occur, he desired that his friend, Dr. J. Marion Sims should be called in consultation.

On Tuesday, the 14th, after an exhaustive consideration of the case, Dr. Sims coincided with me as to the possibility—nay, in the absence of calculous and prostatic disease, of the probability that the well defined stricture at the meatus was the original cause of the cystitis, and might be justly held responsible for its continuance. The

operation was at once decided upon, and the patient placed under the influence of ether by Dr. Henry Sims. I then thoroughly divided the contraction, first by the use of Civiale's *bistouri cache*, completing the division of some remaining elastic fibres with a straight blunt bistoury, until the opening admitted bulbous sound 31. This was then carried easily down to the membranous urethra, without discovering any further obstruction. The bladder was again thoroughly explored for calculous by both Dr. Sims and myself. It was found much contracted and thickened, but contained no stone. On the 15th, the day following the operation, I ascertained that since the division of the contraction, our patient had not had the necessity of passing his water more than once in two hours, and that the pains in the testicles, the hypogastrium, the perineum, and down the thighs, which had previously been the chief suffering, had *entirely disappeared*. There was manifestly less blood in the urine. By the 16th the pus had diminished half in quantity, the blood had entirely disappeared, and the interval between the acts of urination had increased to two hours and a half. From this date the only treatment to which the patient was subjected was the daily introduction into, and not beyond, the fossa navicularis, of a 31 bulbous sound, up to the 26th, by which time purulent sediment in the urine had entirely disappeared; riding nor walking no longer gave him discomfort, and he had resumed his business. The interval between acts of urination now vary from two to three hours. There is an occasional occurrence of spasm during the act, which causes the sudden stoppage of the stream, and the urine is voided slowly, and with but little more force than before the operation; but he is not conscious of any other abnormality remaining. He expresses himself as feeling and being in better condition than for years. A few days subsequent to this interview with the patient, he went abroad to remain during winter, and I have not since heard from him.

Case 19.—Mr. A., aged 68. History of a first gonorrhœa at 21. Married at 27. Had seven children, and no trouble with genito-urinary apparatus until four years ago, when he contracted another gonorrhœa. This, after a month, subsided into a gleet, and to this, in about three months after, an acute cystitis was added. The cystitis resisted every treatment, and has continued in a greater or less degree of severity up to the present time. About a year since he began to suffer with neuralgic pains in the groins and perineum, and a very uneasy sensation in his testicles, one of which became considerably enlarged. November 26, 1874—Penis only 2 inches in length, flacid; 3¼ inches in circumference. Meatus 18 f., left testicle half the usual size, right testicle normal, but with a greatly enlarged and soft epididymis, almost entirely covering in the glandular structure and forming a swelling about it as large as a Madeira nut, and described as the seat of long standing and troublesome irritation. Some muco-purulent secretion from urethra. Has been treated for some time by use of soft bougies, with pain and no relief. Complains of pain in the

back and groins, extending down along inner aspect of thighs. Micturition every half hour day and night. Freshly voided urine loaded with pus and mucus, alkaline reaction, strong urinous odor, no renal epithelium or casts; albumen slight. Is uneasy and restless in manner, and full of anxiety, quite like a confirmed hypochondriac. Examination with 18 f. bulbous sound detects a stricture at meatus, extending back for half an inch, after which it slips down the urethra without giving evidence of any further obstruction. December 22d. Saw the patient in consultation with Dr. Willard Parker. Division of the stricture at meatus agreed upon. Ether administered by Dr. Charles Turnbull. The stricture at the meatus was first divided—dense cicatricial tissue, extending for fully half an inch. Bulbous sound 32 f. was then passed to 2¾ inches, when it was arrested by a second stricture. 27 f. defined its calibre. The dilating urethrotome was then introduced, turned to 30 f. and made to cut. 31 f. solid steel sound then passed without obstruction through into the bladder. Relief to the neuralgic pains followed the operation almost immediately. Within 48 hours the intervals between acts of micturition increased from half hour to four or five hours; pus in urine greatly decreased; irritation in scrotum ceased; swelling of epididymis gradually went down, and the patient made a complete recovery without other treatment, within four weeks.

In the foregoing cases, presenting features more or less grave in their conditions and consequences, a point of significant interest is common to all, viz., an abnormal contraction at or near the meatus urinarious—the well determined sequel, in the majority of instances, of antecedent inflammatory action. Abnormal spasmodic muscular action plays a prominent part in every case—spasm of the urethral walls, of the accelerator urinæ muscle, of the cremasters, of the vesical neck and of the seminal ducts. Spasm, as in case 10, so firm and persistent that the urethral walls finally gave way behind it; spasm that for months resisted the introduction of the smallest instrument, as in case 3d; spasm so persistent that the bladder was not allowed to completely empty itself for years, as in cases 17, 18. 19, and thus producing the chronic catarrh, which finally became so grave an element in these cases, and, as in case 12, where the testicles played at see-saw for nearly three years, and until the poor wretch who owned them was driven to the verge of suicide. Some one or several of these conditions appear as a persistent feature in each. Spasm, a well recognized result of irritation, is equally significant of debility. Most of the cases, if not all, were subjects of sexual excess. Irritation supervening upon nervous debility, spasm naturally results—not of necessity a painful irritation, which invites attention, by reflex disturbance, at once to the point of trouble.

Dr. Hanfield Jones, in his work on functional nervous disorders, says: "It seems to be well ascertained that an unfelt irritation may give rise to very various morbid phenomena, affecting both the motor and sensory nervous organs. Dr. Brown-Sequard maintains that

various forms of insanity, of vertigo, chorea, hysteria, tetanus, etc., may be due to irritations starting from a centripetal nerve, and frequently slightly felt or *unfelt*, and that the suppression of these irritations may cure the patient. He cites the case where a married lady suffered for a considerable time with a uterine neuralgia, which ceased completely on the extraction of a tooth that had not caused any considerable annoyance. In the excellent little brochure on stricture by Sam'l L. Wilmot, London, page 9, we read; "it is easy to conceive, however, with what ease morbid irritation in the urethra may elude detection, and which, though slight, may be capable of exciting perfect reflex action, particularly in systems of high nervous mobility—and where the slightest irritation exists within the urethra, the mere influence of the mind, derangement of the digestive organs, and various other remote causes, will lead to spasm." What then in these cases of evident reflex nervous trouble is suggested as the cause of the irritation? Division of a contracted meatus, as has been shown, relieves the reflex disturbances, and yet simple contraction of the meatus cannot be sufficient to produce such morbid nervous action as cited, for it is well known that congenital contractions at this point are frequent, and yet no irritation ensues. In congenital contractions, however, the muscular surroundings of the urethral orifice are in a normally supple condition, and able efficiently to play their part in completing the emptying of the urethra after micturition. Let this delicate muscular structure become infiltrated with plastic material, and the complete discharge of the last drops of urine, through its action, is rendered impossible. A dribbling after the act is the necessary consequence; and this is also an unvarying feature in all the foregoing cases. It is this inevitable retention of a few drops of urine which I believe to be the starting point of the irritation. As time goes on, and the plastic exudation becomes organized, cicatricial tissue forming and necessarily condensing, a permanent contraction results, which adds to the muscular inefficiency, especially when it occurs in an orifice congenitally insufficient. It is this condition which prolongs gonorrhœa, and is the most fruitful source of chronic urethral discharge following a gonorrhœa. That the retained urine causes the irritation I am led to believe still further, inasmuch as behind strictures at the meatus, granular spots of inflammation occur, sometimes extending throughout the urethra, and, on relief of the stricture, promptly disappear, without other treatment, as in the third case cited. I have seen many such. Local points of tenderness were present in almost, if not quite all, the cases of reflex urethral irritation that I have met. Then, as the urethal orifice becomes permanently contracted and unyielding, a distinct and sudden arrest of the stream of urine repeatedly occurs during the forcible act of urination. Is it too much to believe that the force of this blow at the point of arrest will add to the irritation, and that the effect of its recoil should be felt back even to the vesical neck? It seems to me that this may, after long years of such constant irritating influence, prove an impor-

tant element in disturbing the harmonious action of the complex sensory, motor, and sympathetic nervous distribution in the deeper parts of the urethra. Considering the force and persistence of the spasm in certain cases, the idea of its tetanic nature has suggested itself, induced by pressure and irritation of the nerves of the glans in the cicatricial contraction. The treatment of the contractions by complete division, resulting in prompt and notable relief in all the cases, is equally suggestive of simple mechanical obstruction, urinary retention or cicatricial irritation. To be effectual, however, the division must be absolute and entire. It is not sufficient that the meatus be enlarged up to the normal urethral calibre. The incision must reach down through all cicatricial tissue, and be so complete that the largest sized bulbous sound that can be passed through the opening, shall pass in and return without the slightest sense of resistance. If it is less than this, the contraction is absolutely certain to return within a few weeks, even within a few days, and often in spite of every possible effort to keep the parts dilated. Once, however, the strictured tissue is completely divided, it is only requisite that the edges of the wound be kept asunder by the daily introduction of a sound, until granulation is established throughout its extent. After this, not only will no recontraction take place, but the fibrous material will, in time, become wholly absorbed. This important statement, applying virtually to all strictures of the urethra wherever located, I do not make without the ability to prove it by the results of this plan as presenting in many cases thus treated—in over 30 of which examination has been had at periods varying from two years and three months to six months from the date of operation.

During the last month, I presented before the members of the New York Medical Journal and Library Association, a case where originally six urethral strictures were present, including one at the meatus of a size of 24 f. These strictures were operated upon in January, 1871, more than two years previous. Examination with the bulbous sound, No. 30, in the hands of a committee, consisting of Prof. Alfred Post, Dr. Miner, and Dr. J. De Forrest Woodruff, failed to detect the slightest stricture, either at the meatus or at any other point. And in order to demonstrate the complete return of the urethra to its normal resiliency, by gentle pressure I introduced, in the presence of the Journal Association, bulbous sound No. 34 millimeter in circumference through the meatus, and down to the bulbo-membranous junction.